



THIRD CLASS MAIL

A T NELSON
SYSTEMS CONSULTANT
BOX 3
SCHOOLEYS MOUNTAIN
NJ 07870
PROD

ANOTHER Datamation Reader Inquiry



PRICE SHEET

Catalogue Number	Description	Prerequisite	Price
<u>GRAPHIC TERMINAL</u>			
1010	Conograph/10 Graphic Terminal complete with Display Processor (which includes Point, Vector, Curve, Circle, Ellipse, Arc, Template and Character Generators with Graphic scaling of 2, 4, 8, 16, 32, 64x.), Storage Tube Display Monitor, Full ASCII Keyboard, and RS232-C Interface (Either Full or Half Duplex). Terminal includes control panel with Power Lock Switch and all power supplies. Display Terminal is desk top unit 17" wide, 24" deep and 24" high and can accept up to six additional PC boards for options and interfaces.	-----	\$ 8,950
<u>PROCESSOR OPTIONS</u>			
3201	Display Processor Extension. Provides Alphanumeric scaling (1 to 16x), Template scaling (1 to 16x), vertical and horizontal tabulation, 90° rotation of characters and symbols, graphic scaling (1/8x to 2x in 1/8x increments), and Dot/Dash lines. (1 slot).	1010	795
3202	Subroutine Memory Control. Contains the control logic necessary for graphic subroutining and for changing fonts and templates under program control. This assembly is used in conjunction with one of the Conographic memories. (1 slot).	1010 + 3401 or 3402	795
3203	Buffer Memory Control. Contains the control logic necessary for stand-alone terminal configuration, including text and graphic editing. This assembly is used in conjunction with one of the Conographic memories (1 slot).	1010 + 3401 or 3402	795

Catalogue Number	Description	Prerequisite	Price
<u>MEMORIES</u>			
3401	4096 8-Bit Byte Core Memory (2 slots).	3420	\$1,800
3402	8192 8-Bit Byte Core Memory (2 slots).	3420	2,300
3420	Memory Power Supply. Provides power for up to (4) 3401 or 3402 units.	1010	250
<u>GRAPHIC INPUT</u>			
2501	Conographic Pointer/Tablet. Provides the capability to input coordinate pairs to the Conograph 10-14-21. Effective tablet size is 14" x 14". Table top unit is 17" wide, 24" deep and 5" high. Surface may be back lighted for tracings. Unit includes CRT mounted tablet.	1010	2,950
2502	Joystick. Provides the capability to input rate-controlled analog inputs to the Conograph 10-14-21.	1010	840
<u>KEYBOARDS</u>			
2401	Function Keyboard provides up to 32 special function switches. Unit is 7" wide, 3 1/2" high and 7" deep and has a 4 foot cable. Includes mating male connector.	1010	450
<u>EXPANSION CHASSIS</u>			
3701	Expansion Chassis allows addition of up to 12 PC boards. Chassis contains +5 volt power supply, 24 wire wrap connectors and complete I/O connector structure. Unit is 17" wide, 7" high and 24" deep.	1010	875
<u>WIRE WRAP BOARD</u>			
3801	General purpose wire wrap board with 18 24-pin and 82 16-pin I/C carriers. Board contains 2 100-pin edge connectors, card extractors, and 5 volt decoupling.	1010 or 3701	540



PRICE SHEET

Catalogue Number	Description	Prerequisite	Price
	<u>STANDARD INTERFACES — (2 slots)</u> <u>FACTORY INSTALLED</u>	1010	\$
3501	Data General Interface for Models NOVA, 800, 1200 and SUPERNOVA.		700
3510	DEC Interface for Models PDP-8I, 8L.		700
3511	DEC Interface for Model PDP-8I (negative logic).		700
3512	DEC Interface for Model PDP-9.		1,200
3513	DEC Interface for Model PDP-11.		800
3514	DEC Interface for Model PDP-10.		2,300
3515	DEC Interface for Model PDP-15.		1,000
3520	HP Interface for Models 2114B, 2115A,		700
3530	Honeywell Interface for Model Number 316, 416, 516.		1,400
3540	IBM Interface for Systems 360, 370.		3,750
3545	IBM Interface for Model Number 1130- RPQ-SAC Ch.		1,600
3546	IBM Interface for Model Number 1130-SAC Ch.		1,900
3550	SEL Interface for Model 810A, 810B.		1,400
3560	Varian Interface for Models 620I, 620L, 520.		900
3570	XDS Sigma Series Interface.		4,000

TERMS AND CONDITIONS

PRICES: Prices quoted, FOB Cambridge, Mass. apply in continental U. S. only. Federal, State, or Local Taxes are not included. Option prices are for Factory installation. Field installation prices will be quoted upon request. All prices and specifications are subject to change without notice.

DISCOUNTS: Discounts are available to quantity buyers.

TERMS: Net Cash with order, unless satisfactory open account credit is established. Finance charges apply to invoices over 30 days.

DELIVERY: Quantity 1, 60 - 90 days ARO.

SHIPMENT: Our usual means of shipment is insured motor freight. Urgent needs can be shipped by air freight, or air express in accordance with your instructions.

EXPORT PACKAGING: Export shipment will be crated in separate wooden boxes. Consult factory for prices.

WARRANTY: All Conographic Corporation catalogued products are backed by a 6 month warranty covering the cost of parts and labor. This warranty is honored at our factory in Cambridge, Mass. provided the product is returned transportation charges prepaid, within 6 months after making delivery to the original purchaser and provided our examination discloses the product to have been defective. We assume no liability for consequential damages of any kind, and the purchaser, by acceptance of each product will assume all liability for the consequence of its use or misuse by the purchaser, his employees, or others. In no case shall our liability exceed the original price.

SHIPMENT TO THE FACTORY: All goods shipped to the factory must be prepaid and must be accompanied by documentation explaining the reason for the return. Any goods which have been used by the customer or have been in the customer's possession for more than 30 days cannot be debited when they are returned under warranty unless specifically authorized by Conographic Corporation factory representative. Please communicate with a factory representative before returning equipment to us so that your "turnabout time" can be shortened. Conographic Corporation will pay shipping charges for reshipment of the repaired unit(s) via motor freight. Any other means of shipment must be paid in full by the customer; i. e., Conographic Corporation will ship collect.

PARTS: Service parts can be obtained without cost for warranty repairs by contacting our sales representative or Conographic Corporation directly. When ordering parts, please give the part identification number, the product model number and serial number.

ACCEPTANCE OF DISPLAY SYSTEMS: The criterion for acceptance shall be the successful operation of the equipment using Conographic (CC) standard test procedures and programs applicable to the system involved. All acceptance tests shall be run by CC personnel at Cambridge, Mass. If he so requests in writing, the BUYER will receive a minimum of 24 hours notice so he may witness the tests.

CANCELLATION: BUYER shall be liable for the payment of reasonable cancellation charges, which shall not exceed the unit retail list prices of the items cancelled and shall include, among other things, expenses already incurred, actual liabilities against commitments incident to the order involved, and properly allowable indirect charges as well as a reasonable profit. No delivery delay requested by BUYER on an order placed under this Agreement will be effective unless covered by an amendment to the order that provides for the payment of any agreed upon cost the delay imposes and that is signed by a duly authorized representative of Conographic Corporation.



INTRODUCING THE CONOGRAPH™/10 A LOW COST GRAPHIC DISPLAY TERMINAL



DESCRIPTION

THE CONOGRAPH/10

The Conograph/10 is a general purpose display terminal using a proprietary Conographic* generator for producing an unlimited variety of graphic images, symbols, and alphanumerics. The Conograph/10 is comprised of a full 96 character ASCII keyboard, a 10" CRT, MOS memory, a graphic input capability, a display processor, and the Conographic generator. The terminal is teletype compatible.

The system may be coupled to a timesharing network or connected to the data channel or I/O bus of any large-scale computer or interfaced to a mini-computer as a stand-alone system.

TOTAL INTERACTION

The Conograph/10 is the first low-cost system to provide total interactive graphic capability, including ☐ free-hand and traced inputs ☐ dynamic image manipulation using refresh mode, ☐ unlimited graphic and alphanumeric data storage, and ☐ hard copies.

The data compression feature inherent in Conographic systems is ideally suited for timesharing applications — providing substantial reduction in the size of data files, offering image buildup 10 to 100 times faster, reducing computations, and making no more demands on the computer than teletypes and other more limited terminals.

FIGURES

The Conograph/10 hardware includes circle, ellipse, and arc generators. Circles of any radius (1/256th of an inch to full screen) can be drawn and positioned anywhere on the screen. Arcs of circles can be drawn with any radius, orientation, and position.

Ellipses of any size can be drawn and positioned anywhere on the screen at any orientation. The major and minor axes can be of any size from 1/256th of an inch to full screen, and the ellipse axes can be at any orientation relative to the coordinate axes. Elliptic arcs can be drawn with similar freedom regarding size, position, and orientation.

ALPHANUMERIC FONTS AND SYMBOL TEMPLATES

A character or template element can be comprised of any number of curved strokes, vectors, and positioning movements where the curved strokes are general Conographic curves.

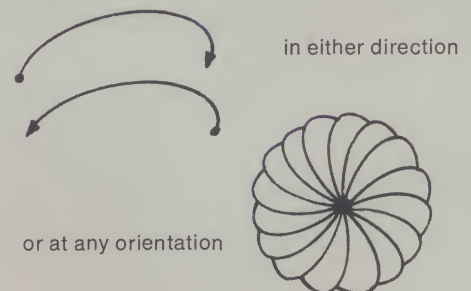
FIRMWARE

With the inclusion of a Random Access Memory in the system, an unlimited number of fonts and templates are available to the user. A font or template can be changed in less time than it takes to display it. In addition, the firmware feature enables the user to design his own fonts and templates with individual characters or symbols at full graphic scale and then reduce them to the desired scale.

ADVANTAGES & CAPABILITIES OF CONOGRAPHIC SYSTEMS

CURVE TYPES

The Conograph generator can draw any kind of curve

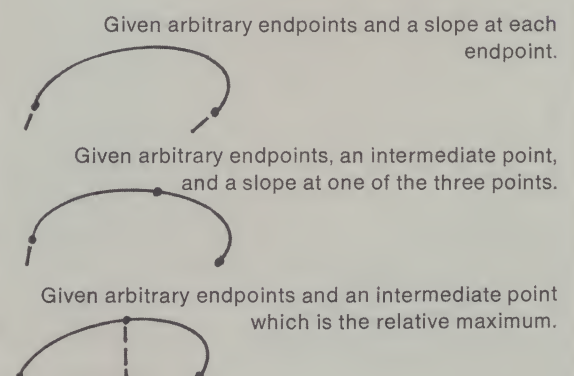


CURVE PARAMETERS

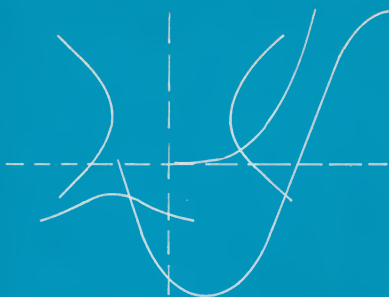
In order to display a curve, the Conographic generator requires only four parameters. Implicit in these parameters is information about the curvature, the slope at any point of the curve, the location of the endpoints, and the position of the point of relative maximum. Thus, curvilinear images can be parametrized with less than 1/10 the information required with conventional generators.

COMPUTATION OF PARAMETERS

Although a given curve has only one unique set of parameters, they may be derived in different ways. Three of the many compatible ways in which the Conographic parameters for a curve can be derived are shown below:



The computations required to derive Conographic parameters are minimal. In the first case above, for example, the derivation involves only four additions, two multiplications, and one division.



GENERAL PURPOSE CURVES

All five curves were generated with a total of 56 bytes (full screen size, 1/2 % accuracy).

Conventional generation would require more than 800 bytes.

EASE OF ROTATION

No matrix inversions are required for any rotation.



RAPID IMAGE BUILDUP

The Conograph/10 makes graphics possible even over low speed lines. The above image can be transmitted at 110 baud in 26 seconds.

TRANSMISSION TIME

BAUD RATE	110	2000
Conograph/10	26 sec.	1 sec.
Conventional graphics terminal	702 sec.	27 sec.

UNLIMITED ALPHANUMERICS AND SYMBOLS

The Conographic generator provides an unlimited choice of alphanumeric fonts and symbol templates. The user can design his own characters and symbols.

Firmware fonts and templates can be changed instantly on local systems, and in seconds on remote systems – without modifying hardware.



OPERATION

Operation of the Conograph/10 is extremely simple. The user – engineer, scientist, or businessman – interacts with the system using techniques and terminology that he is accustomed to.

Textual information is entered through standard keyboard, and graphic data may be drawn directly onto the CRT screen or digitized from an existing drawing.

GRAPHIC FEATURES

DISPLAY METHOD:

Analog-Conographic*

ADDRESSABLE RASTER:

8192 x 8192

VIEWABLE POINTS: 2048 x 1520

DRAWING MODES: Absolute

and Relative

POSITIONING MODES: Absolute

and Relative

MAXIMUM COMPONENT: 2048 ru

SCALING: 2x, 4x, 8x, 16x, 32x,

POINTERS: Graphic Cursor

Sonic Pointer (Option SP)

DOT/DASH LINES: (Option DD)

ALPHANUMERIC FEATURES

DISPLAY METHOD:

Analog-Conographic*

CHARACTERS PER LINE: Up to 341

LINES OF CHARACTERS: Up to 158

SIZE OF STANDARD

CHARACTERS: 86 x 62 mils

SCALING: 1 to 15x

CHARACTER CODES: 96 ASCII

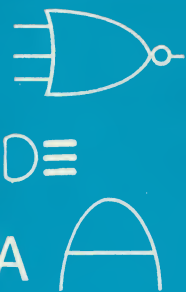
(EBCDIC AVAILABLE)

CURSORS: Single or Repeat Action

ITALICS: On all Characters

TABULATION: (Option TB)

*A proprietary development of the Conographic Corporation



SUBSTANTIAL DATA COMPRESSION

The Conographic generator compresses data by a factor of 10 to 100. Conography compresses the data for the image to 72 bytes; conventional techniques require more than 800 bytes.



ABILITY TO DEFORM IMAGES EASILY

Curves can be deformed continuously until the desired contour is attained.

Curve deformation can be used for inputting free-hand sketches.



LOW COST

The Conograph/10 outperforms all other low cost terminals and is competitively priced.

In addition, the Conographic generator makes possible many features not found in substantially higher-priced terminals.

CURVE DIGITIZING

This contour map was digitized with only 336 bytes.

Conventional techniques require up to 100 times more data to achieve equal accuracy.



CONOGRAPH/10

HARDWARE GENERATORS

POINT: Relative or Absolute
VECTOR: Relative or Absolute
CURVE: Relative or Absolute
FIGURE: Circle, Ellipse, or Arc
CHARACTER: Curved Strokes
SYMBOL: (With Option CM)
SUBSCRIPT AND SUPERScript (with Option CM)

MEMORY

MOS: Standard

INTERFACE

RS-232C (Half or Full Duplex)

CRT

SCREEN SIZE: 10 Inch Diagonal (8.3" x 6.5")
REFRESH MODE: 40 Hz (Up to 50 Line-Inches)
STORE MODE: 500 ms Erase Time
PHOSPHOR: P 1
SPOT SIZE: 8 mils

ELECTRICAL

POWER: 115V $\pm$ 10%,
47-63 Hz @ 6 amps

ENVIRONMENTAL

OPERATIONAL: 0 to 50 C.
STORAGE: -25 to 75 C.
HUMIDITY: 10 to 95% (Without Condensation)

PHYSICAL

SIZE: 22" High x 21" Wide x 32" Deep (Includes Keyboard)

OPTIONS

SONIC POINTER (SP)
FIRMWARE OPTION (FW)

INTERFACES
NOVA Series (IN)
PDP Series (IP)
1130 Series (II)

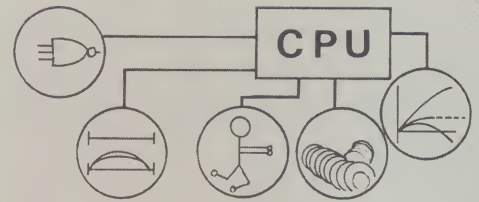
CORE MEMORY
CAPACITY: Expandable to 32K x 8 (CM)

SLAVE CRT (SC)
FONTS & TEMPLATES (FT)

APPLICATIONS

TIME-SHARING

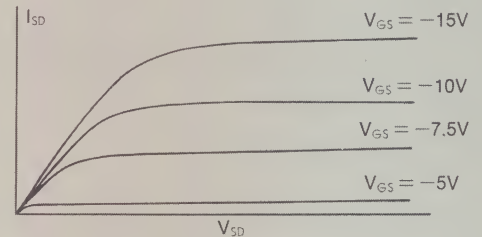
The Conograph/10 is ideally suited to Time-Sharing applications. Its data compression features reduced storage requirements and provides rapid image buildup even over 110 baud lines. Ease of computation allows a Time-Sharing facility to service Conograph/10 display terminals interchangeably with Teletypes and without additional load on the system. The unlimited choice of symbols and fonts and the ease with which they can be changed enables a Conograph/10 terminal to be compatible with any T-S facility without changes in hardware and without costly conversions of drawing conventions.



CIRCUIT, LOGIC, AND SYSTEM DESIGN

The Conograph/10 enhances and simplifies logic and circuit design. The unlimited choice of symbols made possible by Conography enables each installation to maintain complete compatibility with existing symbol styles and drawing conventions, and to add new symbols or modify existing ones easily and without hardware changes. This feature allows users to interface to different Time-Sharing installations irrespective of the codes they assign to symbols.

The data compression inherent in Conography reduces substantially the size of data files and provides rapid image buildup – greatly reducing the amount of engineering design time required to complete a project.

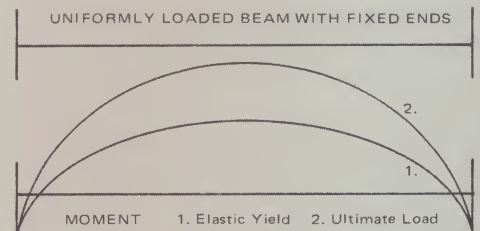


ARCHITECTURE, MECHANICAL, AND GRAPHIC DESIGN

Conography provides a complete design system for architects and mechanical designers. The input features of the Conograph/10 enable designers to sketch free-hand, trace contours, or input standard parts easily.

Conography is ideally suited to applications requiring large data bases. Drawing details can be selectively retrieved, modified, scaled, and incorporated into new drawings; associated specifications can likewise be incorporated with or without modification.

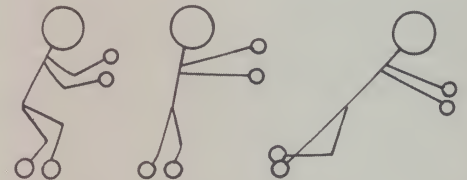
The Conograph/10 is a useful adjunct to performance evaluation – output curves of acoustic, heat or structural analysis can be readily displayed with Conographic hardware.



ANIMATION & DYNAMIC MODELLING

Conography makes it possible to do dynamic modelling and animation without expensive rotational hardware; and since no matrix inversions are necessary for rotations, even a mini-computer can be coupled with a Conograph/10 to provide an inexpensive high-performance system.

Cartoon elements can be defined as symbols and the user can build his own graphic library. This feature and other data compression features of Conography enable the user to create larger libraries or to include more details than with conventional systems.

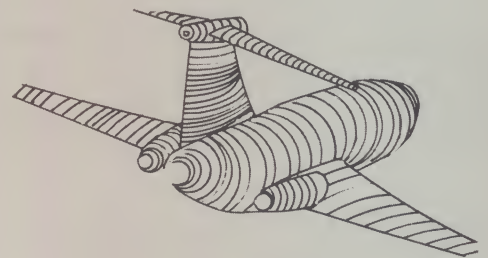


SHIPBUILDING, AIRFRAME, AND STRUCTURAL DESIGN

Conography serves as a powerful tool during all phases of the design process. The creation, storage and retrieval of drawings contribute significantly to the costs associated with airframe and ship design. Substantial savings can be realized from the data compression (files can be reduced to less than 10% of original size) offered by Conography.

The free form input and curve deformation features of the Conograph/10 simplify the specifications of contours for structural members; the digitizing feature can be used to easily input data relating to existing designs. The computational efficiency of the Conographic hardware facilitates image rotation so that structural members may be viewed from various perspectives and angles.

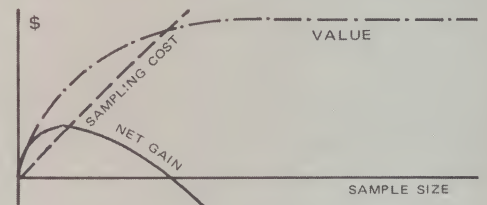
The intrinsic mathematical simplicity of Conography yields simpler calculations for structural analysis than conventional Spline fits.



DATA ANALYSIS

The Conograph/10 facilitates interactive data analysis by providing easy ways to translate, scale, rotate and deform data representations.

However, Conography provides more than just a visual aid for data analysis. The mathematics of Conography provide a variety of ways to perform data fitting, including single-valued, multi-valued, or invariant fits, as well as a choice of boundary conditions. Conography also provides an alternative to Spline functions and fits, with increased flexibility and reduced computations.



ACTION REQUEST

We will be pleased to send you additional literature on Conography and/or the Conograph/10.

Please fill in the information below concerning your requirements. My application for computer graphics is:

I AM USING OR PLAN TO USE:

- ☐ Our computer, Model _____
- ☐ Timesharing, CPU Model _____

MY REQUIREMENT FOR COMPUTER GRAPHIC DISPLAY IS:

- ☐ Immediate
- ☐ 3 to 6 months
- ☐ 7 to 12 months

I need ☐ Do not need ☐ Hard copy.

SEND ME THE FOLLOWING LITERATURE:

- ☐ Conograph/10 Programming Manual
- ☐ Conographic Curve Generation
- ☐ Curve Matching/Reproduction Using Conography
- ☐ Using Conography for Symbol Design
- ☐ Conographic Figure Generation
- ☐ Conographic Rotation
- ☐ Mathematical Principles of Conography

ACTION REQUIRED:

- ☐ Arrange for demonstration.
- ☐ Have a sales engineer call on me.
- ☐ Put my name on your mailing list.
- ☐ For information only.

Name _____

Company _____

Address _____

City _____ State _____ Zip _____

Telephone() _____ Ext. _____

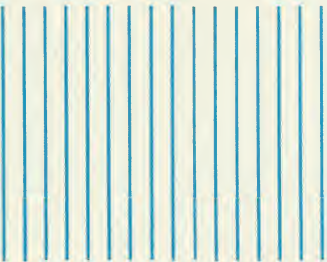
FIRST CLASS
PERMIT # 43260
CAMBRIDGE, MASS.

BUSINESS REPLY MAIL

NO POSTAGE NECESSARY IF MAILED IN THE U.S.A.

POSTAGE WILL BE PAID BY:

CONOGRAPHIC CORPORATION
380 GREEN STREET
CAMBRIDGE, MASSACHUSETTS 02139



Please fold and staple before mailing

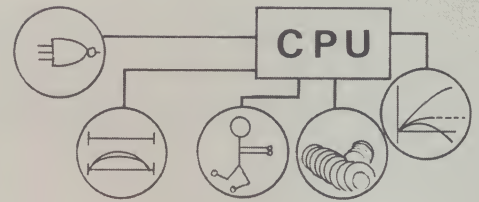
We will be pleased to send you additional literature on Conography and/or the Conograph/10.



APPLICATIONS

TIME-SHARING

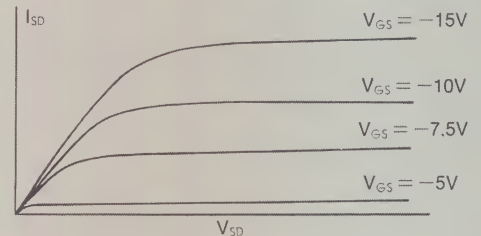
The Conograph/10 is ideally suited to Time-Sharing applications. Its data compression features reduced storage requirements and provides rapid image buildup even over 110 baud lines. Ease of computation allows a Time-Sharing facility to service Conograph/10 display terminals interchangeably with Teletypes and without additional load on the system. The unlimited choice of symbols and fonts and the ease with which they can be changed enables a Conograph/10 terminal to be compatible with any T-S facility without changes in hardware and without costly conversions of drawing conventions.



CIRCUIT, LOGIC, AND SYSTEM DESIGN

The Conograph/10 enhances and simplifies logic and circuit design. The unlimited choice of symbols made possible by Conography enables each installation to maintain complete compatibility with existing symbol styles and drawing conventions, and to add new symbols or modify existing ones easily and without hardware changes. This feature allows users to interface to different Time-Sharing installations irrespective of the codes they assign to symbols.

The data compression inherent in Conography reduces substantially the size of data files and provides rapid image buildup – greatly reducing the amount of engineering design time required to complete a project.

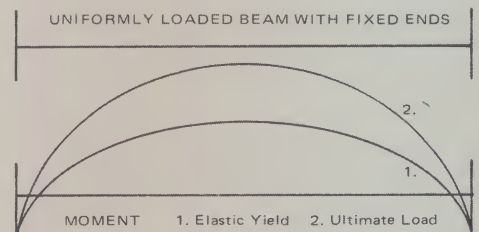


ARCHITECTURE, MECHANICAL, AND GRAPHIC DESIGN

Conography provides a complete design system for architects and mechanical designers. The input features of the Conograph/10 enable designers to sketch free-hand, trace contours, or input standard parts easily.

Conography is ideally suited to applications requiring large data bases. Drawing details can be selectively retrieved, modified, scaled, and incorporated into new drawings; associated specifications can likewise be incorporated with or without modification.

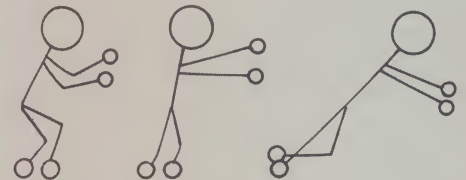
The Conograph/10 is a useful adjunct to performance evaluation – output curves of acoustic, heat or structural analysis can be readily displayed with Conographic hardware.



ANIMATION & DYNAMIC MODELLING

Conography makes it possible to do dynamic modelling and animation without expensive rotational hardware; and since no matrix inversions are necessary for rotations, even a mini-computer can be coupled with a Conograph/10 to provide an inexpensive high-performance system.

Cartoon elements can be defined as symbols and the user can build his own graphic library. This feature and other data compression features of Conography enable the user to create larger libraries or to include more details than with conventional systems.

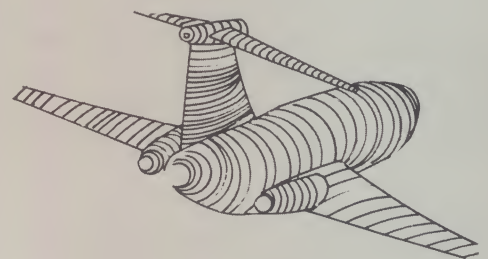


SHIPBUILDING, AIRFRAME, AND STRUCTURAL DESIGN

Conography serves as a powerful tool during all phases of the design process. The creation, storage and retrieval of drawings contribute significantly to the costs associated with airframe and ship design. Substantial savings can be realized from the data compression (files can be reduced to less than 10% of original size) offered by Conography.

The free form input and curve deformation features of the Conograph/10 simplify the specifications of contours for structural members; the digitizing feature can be used to easily input data relating to existing designs. The computational efficiency of the Conographic hardware facilitates image rotation so that structural members may be viewed from various perspectives and angles.

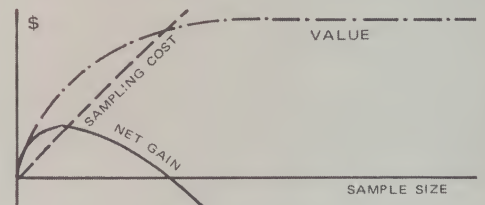
The intrinsic mathematical simplicity of Conography yields simpler calculations for structural analysis than conventional Spline fits.



DATA ANALYSIS

The Conograph/10 facilitates interactive data analysis by providing easy ways to translate, scale, rotate and deform data representations.

However, Conography provides more than just a visual aid for data analysis. The mathematics of Conography provide a variety of ways to perform data fitting, including single-valued, multi-valued, or invariant fits, as well as a choice of boundary conditions. Conography also provides an alternative to Spline functions and fits, with increased flexibility and reduced computations.





The Conographic Corporation's proprietary Conographic generator, a significant breakthrough in graphic display technology, offers increased system performance and data throughput at reduced cost in both hardware and software.

Other products in the Conographic Series:

The Conograph/14

An intermediate size graphic terminal with a 14 inch screen, hardware subroutines, scissoring, scaling, and relocation. Features expanded use of the Conographic curve generator.

The Conograph/21

A large-scale graphics processor with a 21 inch screen, dimensional rotational graphics, plus all the features of the Conograph/14. Performance is superior to that of units costing twice as much.

For further information, applications, data and prices, please contact our Marketing Department – Tel. (617) 491-5820

